



Second Supplement to the Key Bridge Proposals to Administer a Spectrum Access System and a Environmental Sensing Capability

*Response to FCC Request for Supplemental Information
GN Docket No. 15-319*

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Opening Letter

Key Bridge LLC (fmr Key Bridge Global LLC, dba “Key Bridge”, “Key Bridge Wireless”) is pleased to submit this additional supplement to our proposals to administer a Spectrum Access System (SAS) and a Environmental Sensing capability (ESC) in the 3.5 GHz frequency band.

This document is written to be directly responsive to the questions posed and, accordingly, makes reference to our separate *Proposal to Administer a Environmental Sensing Capability* and to our *Proposal to Administer a Environmental Sensing Capability*.

We thank the Commission for this opportunity and are happy to provide any additional information the Commission may require to evaluate our proposals.

/s/

Jesse Caulfield, CEO
Key Bridge LLC

Proposal Supplement

The following sections supplements our *Proposal to Administer a Spectrum Access System* or our *Proposal to Administer a Environmental Sensing Capability*.¹ Each section identifies its associated document and is numbered according to its position in the updated proposal document.

The following sections revise and supplement our *SAS Proposal*. A new Appendix 14 provides additional detail about our plans to offer and support spectrum leasing. The responses to compliance requirements for section §96.66 of the Commission's rules are revised to cross reference the new appendix.

¹ See Key Bridge *Proposal to Administer a Spectrum Access System* (SAS Proposal) and *Proposal to Administer a Environmental Sensing Capability* (ESC Proposal), GN Docket 15-319, both submitted March 15, 2016.

1 Responses to Compliance Requirements

§96.66 Spectrum Access System Responsibilities Related to Priority Access Spectrum Manager Leases

<i>(a) An SAS Administrator that chooses to accept and support leasing notifications shall:</i>	<p>Key Bridge affirms that our SAS Infrastructure will support PAL assignments of authorization, transfers of control and leasing arrangements through an externally operated secondary market facility.</p> <p>A new Section 14 (Appendix: Spectrum Leasing) is provided in this document to supplement our SAS Proposal.</p>
<i>(1) Verify that the lessee is on the certification list, as established in section 1.9046 of this chapter.</i>	<p>Reference Section 14.2 (Lessee Registration and Validation)</p> <p>SAS Infrastructure and the Exchange will verify lessee certification either by confirming user status as a Priority Access Licensee or as a ULS (form 608) certified entity.</p>
<i>(2) Establish a process for acquiring and storing the lease notification information and synchronizing this information, including information about the expiration, extension, or termination of leasing arrangements, with the Commission databases at least once a day;</i>	<p>Reference Section 14.4 (Reporting)</p> <p>A completed spectrum trade on the Exchange will generate an automated notification and update from the Exchange to the SAS. Once daily the SAS will generate a lease notification transaction report and submit the daily transaction report to the FCC. The transaction report will contain, at minimum, the information fields identified in §1.9046(c).</p> <p>The synchronization process and data transfer scheme will be automated and machine-readable.</p>
<i>(3) Verify that the lease will not result in the lessee holding more than the 40 megahertz of Priority Access spectrum in a given License Area;</i>	<p>Reference Section 14.3 (Spectrum Aggregation Limits)</p> <p>SAS Infrastructure and the Exchange will independently record the holdings of each lessee and will take care to ensure that no controlling entity holds more than 40 MHz of Priority Access spectrum in any given License Area.</p> <p>Key Bridge will also take care to ensure that a violation of this requirement, be it inadvertent, purposeful, or due to error or omission, will be rapidly and automatically</p>

	corrected and reported to the Commission upon discovery.
<i>(4) Verify that the area to be leased is within the Priority Access Licensee's Service Area and outside of the Priority Access Licensee's PAL Protection Area; and</i>	<p>Reference Section 14.1 (Anatomy of a Spectrum Trade) and Section 6.10.8 (PAL Protection Areas)</p> <p>SAS Infrastructure will verify that the geographic extent of all leases conforms with the Rules and are within the Priority Access Licensee's Service Area and outside of the Priority Access Licensee's PAL Protection Area.</p>
<i>(5) Provide confirmation to licensee and lessee whether the notification has been received and verified.</i>	<p>Reference Section 14.1 (Anatomy of a Spectrum Trade)</p> <p>SAS Infrastructure and the Exchange will provide positive (or negative) notification to the lessor and to the lessee when a leasing notification has been received and verified (or cannot be verified).</p> <p>Notifications will be made immediately upon acceptance, verification and processing of a completed lease transaction or failure of the same.</p>
<i>(b) During the period of the lease and within the geographic area of a lease, SASs shall treat any CBSD operated by the lessee the same as a similarly situated CBSDs operated by the lessor for frequency assignment and interference mitigation purposes.</i>	<p>Reference Section 14.5 (Lessee and Lessor Rights and Responsibilities)</p> <p>Key Bridge affirms that SAS Infrastructure will extend Priority Access Licensee protections after a leasing notification is accepted (i.e. received, verified and processed) by the SAS Infrastructure for CBSDs operating within a leased geographic area and for the specified time period.</p>

14 Appendix: Spectrum Leasing

Key Bridge affirms that our SAS Infrastructure will support PAL assignments of authorization, transfers of control and leasing arrangements through an externally operated secondary market facility.

In the Key Bridge spectrum leasing architecture and strategy the secondary market facility is a Spectrum Capacity Exchange (“Exchange”). The Exchange is established and operated as a trusted CBRS infrastructure component that communicates directly with the SAS via a bilateral peering arrangement. This concept is shown below in Illustration 1.

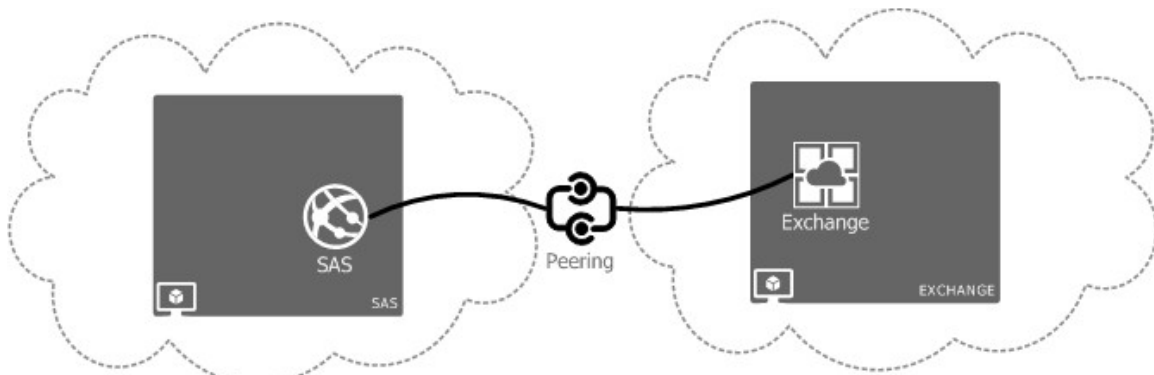


Illustration 1: SAS to Exchange peering enables a liquid spectrum trading marketplace.

In addition to peering with the Key Bridge SAS Infrastructure, the Exchange will support concurrent spectrum trading with any number of other authorized SASs through separate, independent bilateral peering sessions on a non-discriminatory basis.

14.1 Anatomy of a Spectrum Trade

As described in sections §96.32, §1.9020 and §1.9046 of the Commission’s rules, a PAL licensee may engage in spectrum manager leasing transactions (a “spectrum trade”) with any other properly validated entity. A spectrum trade implements a de facto leasing arrangement for a portion of a PAL’s spectrum, time duration and geographic area outside of the PAL Protection Area.

In practice a spectrum trade is a multiple step transaction implemented by and between the Exchange and SAS Infrastructure that implements, executes and perfects the transfer and assignment of spectrum license rights between trading parties. A high level process diagram illustrating this concept as envisioned for CBRs is shown in Illustration 2.

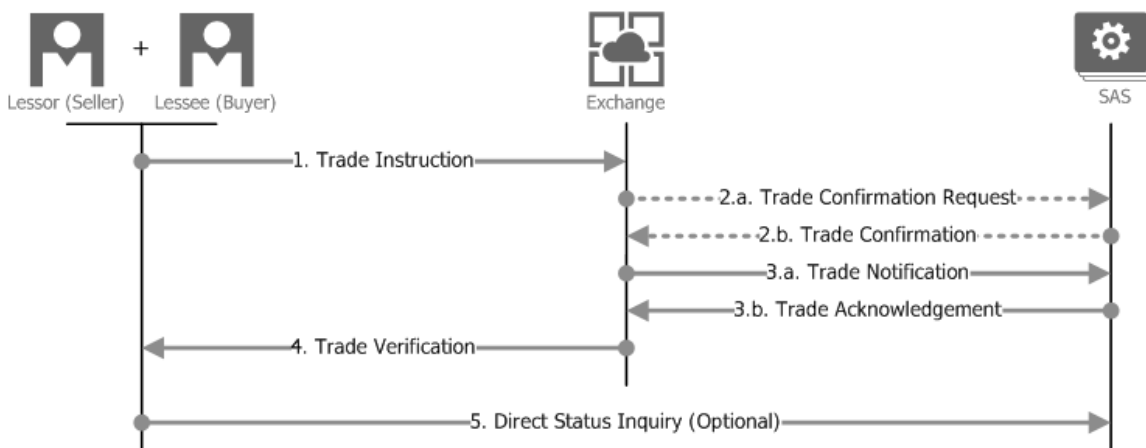


Illustration 2: Anatomy of a multiple part spectrum trading transaction.

A spectrum trade begins when two parties, a lessor (seller) and a lessee (buyer), agree to conduct a leasing arrangement facilitated through the Exchange. The spectrum trade transaction starts as the Exchange first validates the requesting parties’ certification status and also confirms that the trade, if completed, will not violate a spectrum aggregation limit. Prima facie valid trades are then submitted for automated review and confirmation to the SAS.

Upon receipt of a trade confirmation request the SAS also confirms the requesting parties’ certification status and the proposed trade’s compliance with spectrum aggregation limits. The SAS then conducts a geospatial analysis to verify that the area to be leased is within the lessor’s PAL Service Area and is outside the PAL Protection Area. Upon successful validation the SAS affirms to the Exchange that the prospective trade is acceptable, after which the Exchange completes the trade transaction and issues a trade completion notification to the SAS and a trade completion verification is forwarded to the parties. The parties may also directly query the SAS to receive a transaction status.

By this methodology the Exchange and SAS confirm to each other and to the licensee and lessee that a spectrum trade has been received, verified, accepted and completed.

14.2 Lessee Registration and Validation

Both the Key Bridge SAS and Exchange will implement formal know your customer (“KYC”) processes in compliance with the certification requirements described in 47 CFR §1.9046(b). User registration status will be shared between the SAS and Exchange and either entity may conduct CBRS lessee registration and validation. This concept is shown in Illustration 3.

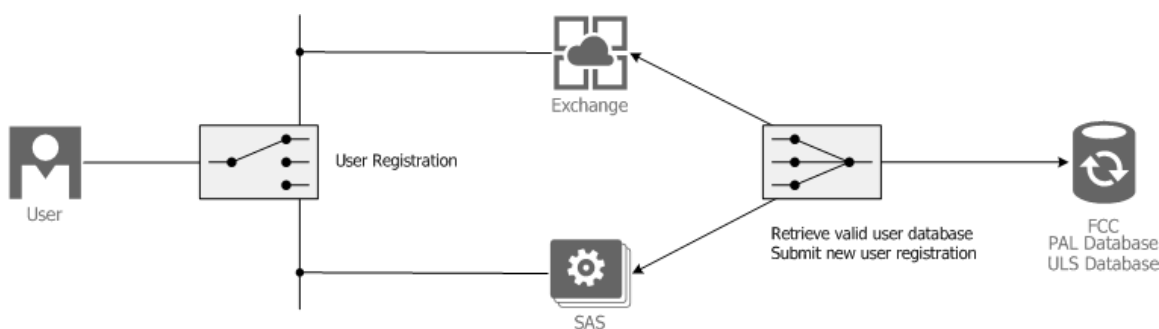


Illustration 3: CBRS users may initiate registration with a SAS or the Exchange.

Which infrastructure component (SAS or Exchange) performs the lessee validation function is determined by the lessee and how the lessee initially engages with the CBRS ecosystem.

The Key Bridge SAS and Exchange will acquire and store a copy of the FCC provided database of Priority Access Licensees, as defined in §96.3. Entities in the PAL database will be automatically validated as certified users when registering with the SAS and the Exchange.

The Key Bridge SAS and Exchange customer enrollment processes will also support the registration and certification of unlicensed parties through the Universal Licensing System and FCC Form 608.

14.3 Spectrum Aggregation Limits

Priority Access Licenses in the SAS and also in the Exchange are always associated with a currently registered and validated lessee. Both the SAS and the Exchange will take care to ensure that no controlling party’s licensed holdings exceed the spectrum aggregation limits identified in §96.66(3) of the Commission’s rules.

Key Bridge will also take care to ensure that any violation of this requirement, be it inadvertent, purposeful, or due to error or omission, will be quickly and automatically corrected and reported to the Commission upon discovery. Corrections may be through the invalidation or reversal (i.e. unwinding) of a spectrum trade or other administrative process.

14.4 Reporting

As described in 14.1 (Anatomy of a Spectrum Trade), a completed spectrum trade on the Exchange will generate an automated trade completion notification from the Exchange to the SAS. The electronic notification message will contain, at minimum, the information fields identified in §1.9046(c).

Upon receipt and acceptance the Key Bridge SAS will record the notification in a local transaction database. Once daily the SAS will generate a lease notification transaction report from its transaction database and submit the daily transaction report to the Commission via a Commission-provided automated and machine accessible API. This concept is shown below in Illustration 4.

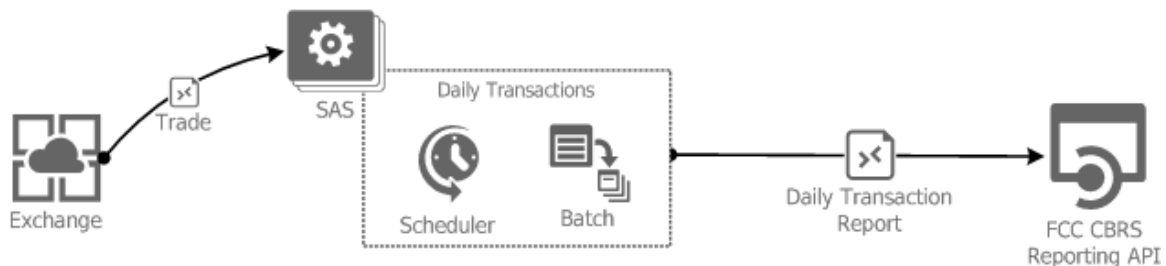


Illustration 4: The SAS will provide a daily transaction report of all leasing activity.

It may be useful for the Exchange to also submit transaction reports or summaries to the Commission. The Exchange will support this capability.

Key Bridge affirms its desire to work with Commission staff to design and to implement an automated reporting capability and machine readable API.

14.5 Lessee and Lessor Rights and Responsibilities

Key Bridge affirms that CBSDs operated by a lessee will be treated the same as similarly situated CBSDs operated by the lessor.

During the period of a lease and within the geographic area of a lease the SAS Infrastructure will extend Priority Access Licensee protections after a leasing notification is accepted (i.e. received, verified and processed) by the SAS Infrastructure. This treatment will be extended for CBSDs operating within a leased geographic area and for the specified time period. If no time period is indicated then protections will be afforded immediately upon leasing notification acceptance and extended until either the original PAL expires or a subsequent notification of early termination is received by the SAS Infrastructure. Furthermore, during the period of a lease and within the geographic area of a lease the SAS Infrastructure will treat lessee operated CBSDs the same as a similarly situated lessor operated CBSD for frequency assignment and interference mitigation purposes.

14.6 Information Retention

The SAS and Exchange will retain all necessary and pertinent spectrum trade information for 60 months.

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